AMENDMENTS TO THE CLAIMS

Please cancel claims 1-11 without prejudice or disclaimer of their underlying subject matter.

1-11 (canceled).

Please add the following new claims.

12. (new) A method of operating a data processing system which estimates candidate networks that are descriptive of relationships between interrelated elements as a network and that, when data generated by said elements from said network is given, are capable of reproducing data based on said data given, said network being represented by a triplet comprising a network structure; a parameter set; and a degree of fitness between said data given and data reproducing from the network structure and the parameter set, said method comprising the steps of generating a plurality of candidate networks by:

producing network structures based on the partially known network structures, which may allow for reproduction of said data given;

producing corresponding parameter sets and degrees of fitness;

optimizing said networks utilizing the degrees of fitness;

storing the optimized candidate networks in a first memory means; and

narrowing down appropriate candidate networks from said networks stored in the first memory means, using data different from said given data and that can be generated from network structures which are mutants or crossovers, and storing the networks in a second memory means.

13. (new) The method mentioned in claim 12, wherein the optimization using the degree of fitness in said step of generating said plurality of candidate networks comprises steps of:

selecting N network structures from the produced network structures;

producing N network structures from said selected N network structures;

adapting M parameter sets to each of the 2N networks utilizing degree of fitness to generate the networks, and

selecting P networks of high degree of fitness form the generated 2N x M networks.

14. (new) The method mentioned in claim 13, wherein the optimization using the degree of fitness in said step of generating said plurality of candidate networks further comprises steps of:

searching the vicinity of said selected P networks, and

replacing the network when finding a network of higher degree of fitness.

15. (new) The method mentioned in claim 12 or claim 13, wherein the optimization using the degree of fitness in said step of generating said plurality of candidate networks comprises:

a step of estimating parameters using a genetic algorithm, simulated annealing, and/or an optimization technique such as the hill-climbing method.

16. (new) A computer program embodied on a computer readable medium comprising code means adapted to perform all the steps of claim 12 when said program is run on a data-processing system.

17. (new) A network estimation apparatus, which estimates candidate networks that are descriptive of relationships between interrelated elements as a network and that, when data generated from said network is given, are capable of reproducing said data based on said data given; said network estimation apparatus comprising:

first memory means for storing networks represented by a triplet comprising a network structure, a parameter set, and a degree of fitness between said data given and data reproduced from the network structure and the parameter set;

second memory means for storing networks as final candidates;

means for generating a plurality of candidate networks by producing a network structure based on the partially known network structures, which may allow for reproduction of said data given, producing corresponding parameter sets and degrees of fitness, optimizing said networks utilizing the degrees of fitness, and storing in said first memory means the optimized candidate networks; and

means for narrowing down and storing in said second memory means an appropriate candidate network from networks stored in said first memory means using data different from said given data and that can be generated from network structures which are mutants or crossovers.